

DNCT Scenario Development

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Five Scenarios/ three Frameworks

1. Scenario vs Framework? -

Frameworks are basic approaches or philosophies to protect fish from project operations in the Delta.

Scenarios are unique ways to implement frameworks. Each Scenario has specific goals and objectives that require strategic considerations. All scenarios share common goals (e.g., increase water supply, water quality, and environmental benefits"; "reduce loss of fish at the pumps with least cost to water supply"), as well as unique goals, objectives, and actions.

Three Frameworks:

I. New tougher standards that provide greater protection for fish and higher assurances for operations under the ESA with management focus on relaxation of standards as indicated by real-time monitoring. Also called "flex toward water supply".

II. Relaxation or elimination of standards that provide for minimum or floor protection for fish with minimal assurances for operations under the ESA with management focus on raising or increasing standards on a real-time basis based on real-time monitoring to protect fish when at risk. Also called "flex toward environment".

III. Combination of #1 and #2 with flexibility in either direction. Includes maintaining existing standards and flexing in either direction based on real-time monitoring; or changing standards and flexing as described in #1 and #2. Also called "flex toward both water supply and environment".

Three other Frameworks:

- Fixed standards
- Flexible standards
- No standards

Six Scenarios

The basic configuration of six scenarios developed and discussed by the DNCT are presented in Table 1. The scenarios include common features such as our basic package of facilities, habitat measures, and baseline standards (Accord + upstream CVPIA). The following are more detailed descriptions of each of the scenarios and how they vary from the common features.

Scenario 1

Scenario 1 is characterized by flexible operations from existing standards and some new standards to enlist additional protection for spring chinook salmon in the fall. This is a Framework III type scenario.

Objectives:

- Increase protection of fish in the fall through stricter standards;
- flexibly increase protection of fish in spring through added constraints on exports as indicated through real-time monitoring; and
- increase water supply through relaxation of winter through summer constraints on exports when risks to fish are minimal based on real-time monitoring.

Operations Rules:

- 100 % of water supply gained from spring relaxation of standards would go to environmental account - application of this rule would be determined by environmental manager
- water supply gained from summer, fall (under new standards), and winter relaxation of standards would be split 50/50 between environmental and ag/urban water supply accounts - application of this rule would be determined by environmental manager.
- water supply gained from all new 300 TAF of storage would be dedicated entirely to ag/urban water supply account.
- water supply gained from other new facilities (i.e., JPOD, ISDP, Intertie, etc) would be shared 50/50 between environmental and ag/urban water supply.
- water used for environment above baseline would be taken from pre-banked water in the environmental account; this account would be debited for spills from San Luis of env water.

Distinguishing Features:

- new fall standards to protect spring run salmon smolts from being drawn to south Delta pumping plants - these standards would have new water supply cost (undetermined).
- specific formulas for sharing water supply benefits from relaxation of standards.
- new ag/urban water supply would be available from new 300 TAF of storage, shared water from other new facilities, and a share of water from relaxation of standards in summer and winter; it is undetermined whether relaxation in fall of new standards would provide any new water or whether it would only partly overcome a new deficit caused by the new fall standards.
- new environmental water would come from relaxation of standards and new facilities other than the new 300 TAF of storage.

Tradeoffs:

- more stringent fall standards for greater relaxation winter through summer, a new environmental water account, and new ag/urban water supply.

Risk:

- water commitment for new fall standards may place heavy burden on water supply that may not be made up during the water year - risk to ag/urban water supply and env.

- otherwise no risk to water supply as water allocated for reduced standards would come from pre-banked account.

Scenario 2

Scenario 2 is characterized by flexible operations from much reduced export limitations with floors and caps and flexible operations between them, plus other non-export improvements that would provide debits to an environmental water account. This is a Framework III type scenario.

Objectives:

- Increase protection of fish through flexible operations - limiting exports at times of high fish risk;
- overall reduction in fish mortality linked to increased fish production from non-operation actions
- increase water supply through elimination of existing constraints on exports and limiting exporting when risks to fish are high based on real-time monitoring.
- Day 1 of Stage 1 would provide water supply equal to Accord + Upstream AFRP.
- Benefits to env and ag/urban water supply would accrue after Day 1 as new facilities are developed on a shared basis.

Operations Rules:

- eliminate export standards and replace with fixed caps (to provide base protection for env) and floors (to provide base protection for water supply)
- operate flexibly within the caps and floors such that water supply that is equal to that of the Accord + Upstream AFRP baseline.
- cap would not apply to transfers or env water exports.
- any water supply made available from relaxation (upward) of the floors on exports (up to caps) would be split between an environmental account and ag/urban water supply; any increase above the cap would be credited entirely to env account. Keep track of these new waters - where it is, where it goes.
- any reductions in planned exports within cap to protect fish would come from env account.
- non-export measures that reduce fish mortality above that of common programs would provide additional water supply credits to debit against env water supply account. Requires common currency of credits - normalized mortality reductions based on some fixed currency.
- Env manager would decide how water in env account is used.

Distinguishing Features:

- cap and floors for exports in place of existing standards for exports.
- mortality reductions beyond those provided by export limitations can provide credits against env water supplies.
- Initial water supply commitment to ag/urban to make up for water supply required for In-Delta AFRP. Any new actions require new water supplies.
- Above these initial requirements, any new water supplies developed will be shared.

Tradeoffs:

- relaxing standards allows more flexibility in maintaining water supplies with existing facilities.
- less stringent standards will allow less assurance for ESA

Risk:

- not much
- mortality targets for non-export actions may not be met (thus leaving extra credits in env account, which could be a risk to water users).
- env manager has to decide how to use water efficiently

Scenario 3

Scenario 3 is characterized by flexible operations from existing standards with any new water supply benefits being shared by environment and ag/urban water supply . This is a Framework III type scenario.

Objectives:

- Increase protection of fish above existing standards through flexible operations - limiting exports at times of high fish risk based on real-time monitoring;
- Decrease protection of fish below existing standards through flexible operations - increasing exports at times of low fish risk based on real-time monitoring;
- Maintain water supply at least equal to Accord + Upstream AFRP.
- Any benefits to water supply from new facilities or operations would be shared by env and ag/urban water supply.

Operations Rules:

- Maintain water supply demands from Delta at Accord + Upstream AFRP.
- A portion of any new water developed will go to demands of AFRP Delta actions.
- Flex operations decided by env manager would allow relaxing standards and increasing exports if risks to fish are low; water to be shared between env account and ag/urban.
- Flex operations decided by env manager would allow more stringent standards or protections if risks to fish are high; exports foregone would be credited against env account. Env account may or may not have or retain a debt status.
- Any new water supply gained from new facilities would be shared between env account and ag/urban.
- Use of env account water would be determined by env manager.

Distinguishing Features:

- maintains existing standards with triggers to relax or further restrict standards
- provide credits or debts if operations relax or restrict from existing standards
- env account
- new water supplies are shared between env account and ag/urban
- a portion of new supplies will go to Delta AFRP actions

Tradeoffs:

- relaxing standards allows more flexibility in maintaining water supplies with existing facilities.
- less stringent standards will allow less assurance for ESA

Risk:

- env manager has to decide how to use env account water efficiently.

Scenario 4

Scenario 4 is characterized by flexible operations from existing standards for exports and X2 with any new water supply benefits being shared by environment and ag/urban users . This is a Framework III type scenario.

Objectives:

- Increase fish production above existing standards through flexible operations - limiting exports at times of high fish risk based on real-time monitoring;
- Increase water supply above existing baseline through flexible operations - increasing exports above standards at times of low fish risk based on real-time monitoring;
- Maintain water supply at least equal to Accord + Upstream AFRP.

Operations Rules:

- Maintain water supply demands from Delta at Accord + Upstream AFRP.
- Flex operations decided by env manager would allow relaxing standards and increasing exports if risks to fish are low; water to be shared between env account and ag/urban.
- Flex operations decided by env manager would allow more stringent export limitation than standards if risks to fish are high; exports foregone would be credited against env account. Env account may or may not have or retain a debt status.
- Triggers for flexible operations would be revised through time as necessary and be based on the degree of flexibility available.
- Any new water supply gained from new facilities would be shared between env account and ag/urban on a variable basis depending on specific measure employed.
- Use of env account water would be determined by env manager.

Distinguishing Features:

This scenario is very similar to Scenario #3, except for the following features:

- no provision to provide water supply for Delta AFRP actions.
- sharing between env account and ag/urban would vary among measures.
- flexibility extends beyond exports to include changes to X2 standards (all standards).

Tradeoffs:

- relaxing standards allows more flexibility in maintaining water supplies with existing facilities.
- less stringent standards will allow less assurance for ESA

Risks:

- Some risk to both env and ag/urban water users.

Scenario 5

Scenario 5 is characterized by eliminating standards and simply providing a certain number of days of export restrictions per year for an env manager to reduce export losses and improve fish survival and production in the Bay and Delta. from revised existing standards with other non-export improvements that would provide additional credits to the ag/urban water supply account. This is a Framework II type scenario.

Objectives:

- Increase protection of fish limiting exports at times of high fish risk;
- increase water supply through elimination of existing constraints on exports.
- New water supplies would be shared.

Operations Rules:

- eliminate export standards and replace with number of days exports can be curtailed or number of day equivalents in which exports can be curtailed.
- water supply maintained would be at least Accord + All AFRP.

Distinguishing Features:

- no export standards
- export day equivalent restrictions
- Initial water supply commitment to ag/urban to make up for water supply required for all AFRP actions.
- Above these initial requirements, any new water supplies developed will be shared to provide more water supply for ag/urban and an increase in export day equivalent restrictions (env protectionz).

Tradeoffs:

- eliminating standards allows more flexibility in maintaining water supplies with existing facilities.
- eliminating standards will allow less assurance for ESA.

Risks:

- Risks to env if adequate number of days of export restrictions are not available from season to season.
- Risk to water users if export restrictions are applied to disproportionately large part of available water supply for export.

Scenario 6

Scenario 6 is characterized by new more restrictive export standards with greater ESA assurances. This is a Framework I type scenario.

Objectives:

- Increase protection of fish through setting more stringent export limitations particularly at times of high fish risk;
- Increase water supply through relaxation of new standard when risks to fish are low based on real-time monitoring.
- Water supply set at Accord + all AFRP.
- All new water supply would be allocated to ag/urban as long as operated within the new export and other standards.

Operations Rules:

- tighten export standards to protect fish.
- develop flexible operations triggers that would allow relaxation of export standards with the intent to make up exports lost to tighter standards
- pre-tighten standards with no upper cap on relaxation.
- All new supplies allocated to ag/urban.

Distinguishing Features:

- new more restrictive export standards
- flex operations with triggers to relax standards to other limits (no export cap)
- all new water supply developed goes to ag/urban users.

Tradeoffs:

- more stringent standards will allow greater assurances for ESA

Risks:

- Risk to ag/urban water users if sufficient relaxation capacity is not available to meet water supply needs.

Questions

1. Which AFRP Delta actions would be addressed in scenarios 3 and 4?
2. Who would decide on when to use env account water?
3. Who in Scenario #2 decides when to export water above floor? (Water users decide how much they want above floor up to cap, knowing some will be credited to env account. If env manager wants to limit this, then he has to use his env account credits he has accumulated to reduce the export demand.)
4. How is env account water stored or accounted for? Where do we put water gained in these scenarios?
5. What are the specific triggers that trigger relaxation and restrictions?
6. How can we build water quality into the scenarios?

Table 1. Scenario characteristics:

Scenario	Objectives	Operating Rules	Distinguishing Features	Tradeoffs	Risks
1	<ul style="list-style-type: none"> - Reduce fish export losses by increasing restrictions on fall exports and allowing flexible operations to reduce exports at other times of the year - Increase water supply by allowing relaxation of standards and by providing new facilities that add to water supply. - Share benefits of new water supply. 	<ul style="list-style-type: none"> - more stringent or relaxed standards to be allowed by env manager depending on triggers - water supply saved from relaxation of spring export limits would be allocated to env account. - water supply saved from relaxation of other seasons' exports would be split between env account and ag/urban users. - water supply forgone from export limitation would be charged against pre-banked water in env account. - water supply gained from new storage would go to ag/urban users. - water supply gained from other new facilities would be split between env account and ag/urban users. 	<ul style="list-style-type: none"> - new more stringent fixed fall export standards. - sharing water supply benefits of relaxation of standards and new facilities. 	<ul style="list-style-type: none"> - more stringent fall standards for potential relaxation of export limitations at other times of the year. 	<ul style="list-style-type: none"> - new fall standards may place heavy burden on water supplies for env and water users.
2	<ul style="list-style-type: none"> - Reduce fish losses to exports. - Reduce fish mortality to other factors. - Increase water supply. - Share benefits of new water supply. - Maintain water supply equal to or greater than Accord + Upstream AFRP. 	<ul style="list-style-type: none"> - Eliminate export standards and replace with fixed export caps and floors. - Operate flexibly within these limits and maintain Accord + Upstream AFRP baseline water supply. - Any exports above floors would be shared. - Any restrictions below cap would be charged against env account. - Non-export measures to reduce fish mortality would be credited against env account. 	<ul style="list-style-type: none"> - caps and floors replace existing export standards - mortality reductions credited against env water account - initial water supply commitment to make up for Delta AFRP measures. - new water supply is shared. 	<ul style="list-style-type: none"> - relaxation of export standards allows more flexibility in developing and maintaining water supply. - less stringent standards will provide fewer ESA assurances. 	<ul style="list-style-type: none"> - minimal - env manager must decide how to use water effeciently

Scenario	Objectives	Operating Rules	Distinguishing Features	Tradeoffs	Risks
3	<ul style="list-style-type: none"> - increase protection of fish by allowing more restrictions on exports - increase water supply by allowing less restrictions on exports - maintain water supply at or above that of the Accord + Upstream AFRP. - share benefits of new water supply 	<ul style="list-style-type: none"> - maintain water supply at Accord + Upstream AFRP. - a portion of new water supply developed will go to Delta AFRP actions. - allow more exports above standards if fish risk is low; added exports are shared. - allow less exports than standards if fish risks are high; exports lost are debited against env account. - new water supply developed will be shared. 	<ul style="list-style-type: none"> - maintain existing standard with allowances for greater or less restrictions - water supply obtained from restrictions to be shared - water supply obtained from new facilities to be shared - water supply cost of greater constraints on exports to be borne by env account. - a portion of new water supply will go to Delta AFRP actions. 	<ul style="list-style-type: none"> - relaxation of export standards allows more flexibility in developing and maintaining water supply. - relaxation of standards will provide fewer ESA assurances. 	<ul style="list-style-type: none"> - env manager has to decide how to use env account water efficiently. - risks to both env and ag/urban water users
4	<ul style="list-style-type: none"> - increase protection of fish by allowing more restrictions on exports - increase water supply by allowing less restrictions on exports - maintain water supply at or above that of the Accord + Upstream AFRP. - share benefits of new water supply 	<ul style="list-style-type: none"> - maintain water supply at Accord + Upstream AFRP. - a portion of new water supply developed will go to Delta AFRP actions. - allow more exports above standards if fish risk is low; added exports are shared. - allow less exports than standards if fish risks are high; exports lost are debited against env account. - new water supply developed will be shared <u>on a variable basis</u>. 	<p>Same as #3, except:</p> <ul style="list-style-type: none"> - no provision to provide water supply for Delta AFRP actions. - sharing between env account and ag/urban would vary among measures. - flexibility extends beyond exports to include changes to X2 standards (all standards). 	- same as #3.	- same as #3.

Scenario	Objectives	Operating Rules	Distinguishing Features	Tradeoffs	Risks
5	<ul style="list-style-type: none"> - increase protection of fish limiting exports at times of high fish risk; - increase water supply through elimination of existing constraints on exports. - new water supplies would be shared. 	<ul style="list-style-type: none"> - eliminate export standards and replace with number of days exports can be curtailed or number of day equivalents in which exports can be curtailed. - water supply maintained would be at least Accord + All AFRP. 	<ul style="list-style-type: none"> - eliminate export standards - export day equivalent restrictions - initial water supply commitment to make up for all AFRP actions. - new water supply will be shared above initial commitment. 	<ul style="list-style-type: none"> - eliminating standards allows more flexibility in maintaining water supplies with existing facilities. - eliminating standards will allow less assurance for ESA. 	<ul style="list-style-type: none"> - env risk if adequate day equivalent restrictions are not available. - water users risk if export restriction leave inadequate water supply
6	<ul style="list-style-type: none"> - increased fish protection from more restrictive standards on exports. - increase water supply from new facilities. 	<ul style="list-style-type: none"> - tighten standards to protect fish - flex operations to relax new standards to make up for lost exports - allocate all new water supply to ag/urban users. 	<ul style="list-style-type: none"> - new restrictive export standards - flex operations with triggers to relax new standards - all new water supply to ag/urban users. 	<ul style="list-style-type: none"> - more stringent standards will allow greater ESA assurances for exports. 	<ul style="list-style-type: none"> - risk to ag/urban users if sufficient water supply is not obtained.